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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,318	07/26/2001	Yoshihiro Kurii	211786US0	4944

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,318

Applicant(s)

KURII ET AL.

Examiner

Lynette T. Umez-Eronini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6-6-03
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 10 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 10 and 11 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 1-9 in Paper No. 7 is acknowledged. The traversal is on the ground(s) that the examiner has failed to provide support that the claimed product (Group I: claims 1-9, class 252/subclass 79.1) can be used in a materially different process (Group II: claims 10-11, class 438/subclass 692) such as one that does not require etching metals such as copper or copper alloy and has failed to meet the burden necessary required to sustain the restriction. This is not found persuasive because the claimed etchant composition can be used in a materially different process such as one that does not require using the etchant to etch metals such as copper or copper alloy. Also, since the invention of Group I and Group II is classified in different class/sub class, then the groups would require different areas of search, which would be burdensome to the examiner who does the search.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 1, 2, 3, 6, 7, 8, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferrier ('130) in view of Wong (US 4,636,282).

Ferrier teaches contacting metal (copper and copper alloys) surfaces with an adhesion promoting composition that comprises: an oxidizer, an acid, an corrosion inhibitor, and a source of halide ions and optionally a water soluble polymer (column 4, lines 16-22) and that produces a micro-roughened conversion-coated surface upon the metal (column 4, lines 25-27). The oxidizer comprises hydrogen peroxide (column 4, lines 51-60); the acid, sulfuric acid (column 4, lines 61-67); the corrosion inhibitor consisting of tetrazoles (column 5, lines 1-9), which includes phenyltetrazole, as claimed in the present invention; the source of halide ions may be sodium chloride (column 5, lines 10-14); and water (column 6, line 6). Since Ferrier's compositions is composed of the same chemicals that contacts the same materials as those of the claimed invention, then using Ferrier's composition in the same manner as the claimed invention would result in,

an aqueous solution for micro-etching copper or a copper alloy comprising a main ingredient consisting of sulfuric acid and hydrogen peroxide and an assisting ingredient consisting of phenyltetrazole and a chloride ion source, as **in claims 1 and 6**.

Ferrier differs in failing teach the aqueous solution further comprises a benzene sulfonic acid, as **in claims 1 and 8**; to specify the concentration of benzene sulfonic acid is 10 g/l or less, and 2 to 4g/l as recited respectively **in claim 8 and 12**; and to specify the group from which one of the benzene sulfonic acid is selected, as **in claim 9**.

Wong teaches, "An aqueous composition adapted to be mixed with hydrogen peroxide to provide a solution for etching copper, the preparation of said composition comprising mixing . . . phenol sulfonic acid . . ." (claim 11) and "further comprising between about 0.003 and about 0.05 moles sulfuric acid of an aryl sulfonic acid stabilizing agent selected from the group consisting of phenol sulfonic acid, toluene sulfonic acid, xylene sulfonic acid, . . . (claim 10). The aforementioned reads on the aqueous solution that further comprises a benzene sulfonic acid and benzene sulfonic acid that is selected from the group consisting of phenol sulfonic acid, since the Specification has disclosed "the benzene sulfonic acid is one or more compounds selected from the group consisting of benzene sulfonic acid, toluene sulfonic acid, m-xylene sulfonic acid, phenol sulfonic acid . . ." (page 5, lines 8-13), which would make it obvious to replace benzene sulfonic acid with any of the said sulfonic acids.

It is examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Ferrier by using a Wong's composition aryl sulfonic acid, which comprises the same compounds as applicant's lists of benzene sulfonic acids for the purpose of providing a solution whose stability is preserved after repeated use (Wong, column 4, lines 40-42).

Ferrier further teaches:

the concentration of sulfuric acid ranges from 5 to 360 grams per liter (column 4, lines 64-67), which lies within and reads on the concentrations of sulfuric acid being 60-220 g/l, as in claim 2;

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the concentration of hydrogen peroxide ranges from 6 to 60 grams per liter (column 4, lines 56-60) which lies within and reads on the concentration of hydrogen peroxide being 5-70 g/l, as **in claim 3**; and

the concentration of halide ion may range 5 to 500 milligrams per liter (ppm), which lies within and reads on the concentration of hydrogen peroxide being 1-60 g/l, as **in claim 7**.

4. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferrier (US '130) as applied to claim 1 above, and further in view of Yasushi et al. (English Abstract of JP 11-021517).

Ferrier differs in failing to disclose the phenyltetrazole is 1-phenyltetrazole or 5-phenyltetrazole, as **in claim 4** and to specify the concentration of the phenyltetrazole is 0.01-0.4 g/l, as **in claim 5**.

Yasushi teaches a microetching agent that consists of at least one of tetrazole and tetrazole derivatives, which has a concentration of 0.0001 to 3-wt % (~0.0001 g/100 ml to 3g/100ml ~ 0.001g/l to 30 g/l). The tetrazole derivatives are preferably 1-phenyltetrazole or 5-phenyltetrazole [SOLUTION]. The aforementioned reads on the phenyltetrazole is 1-phenyltetrazole or 5-phenyltetrazole and has a concentration that falls within the range of 0.01-0.4 g/l as in the present invention.

It is examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Ferrier by using a Yasushi's phenyltetrazole for the purpose of roughening a copper surface into a rugged state

having excellent adhesion property with a solder resist and the like [Yasushi, PROBLEM TO BE SOLVED].

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 703-305-2667. The fax phone numbers

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for the organization where this application or proceeding is assigned are 703-972-9310

for regular communications and 703-972-9311 for After Final communications.

Itue

August 15, 2003

NADINE G. NORTON
PRIMARY EXAMINER

